



**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Re application of

Docket No: Q78389

Yuki HONGO, et al.

Appln. No.: 10/713,209

Group Art Unit: 1773

Confirmation No.: 2460

Examiner: Dhirajlal S. Nekarani

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For: **LIGHT TRANSMITTING HARD COAT FILM FOR USE IN TOUCH PANELS**

**DECLARATION UNDER 37 C.F.R. § 1.132**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Yuki Hongo, hereby declare and state:

THAT I am a citizen of Japan;

THAT I have received the degree of Master of Engineering in 1998 from Chuo-  
University;

THAT I have been employed by Lintec Corporation since 1998, where I hold a position  
as a researcher for the development of functional films;

I have prepared a new comparative example, Comparative Example 4.

Preparation of curable composition X for forming high refractive index layer

A solution was prepared by adding 13900 parts by mass of isobutanol to a mixed  
solution of 100 parts by mass of a mixture of polyester acrylate as an ultraviolet curable  
compound and a photopolymerization initiator (Dainichiseika Color & Chemicals Mgf. Co.,

Ltd., brand name: SEIKABEAM EXF-01L(NS)) and 6000 parts by mass of titanium oxide dispersion in isopropanol (CI Chemical Co., Ltd., brand name : Nano Tek TiO<sub>2</sub> SLURRY, concentration: 15 % by mass) and used as a curable composition X (solid content concentration: 2.0% by mass) for forming a high refractive index layer. The metal oxide contained in the curable composition was only titanium oxide.

The hard coat film was obtained using the same method as Example 1 in the specification, except that the curable composition X was used as high refractive index layer.

The evaluation of steel wool hardness of the hard coat film prepared above was "A", that is, scratches were observed on the surface of the hard coat film. The steel wool hardness is described in page 29 of the present specification. And, at the result of the steel wool hardness test, peeling was observed between the high refractive index layer and the low refractive index layer.

On the contrary, in Example 1 in Applicants' specification, the steel wool hardness of the hard coat film was "N," meaning that scratches were not observed. Further, the claimed content of antimony-doped tin oxide (ATO) unexpectedly improves the adhesion between the high refractive index layer and the low refractive layer and increases the total light transmittance.

Also, an adhesion property test was conducted by the cross cutting method according to JIS K5600-5-6. The adhesion property test comprises cross cutting the surface of the hard coat film, laminating a pressure-sensitive adhesive tape on the cross cut surface of the hard coat film, and peeling the pressure-sensitive adhesive tape. The adhesion property test is not described in the present specification. In the adhesion property test, the number of the cross cut pieces of the

hard coat film was 100. The number of the cross cut pieces which were not peeled, was counted. The larger the number of cross cut pieces, the more unexpected superiority of the adhesion.

In Comparative Example 4, the number is 0. That is, all cross cut pieces of the hard coat film were peeled. On the other hand, in Example 1 to 7 described in the present specification, the number of the cross cut pieces which were not peeled was 100. In all Examples, the peeling of the cross cut pieces was not caused.

As described above, the adhesion is unexpectedly superior when ATO is used instead of ITO.

Further, the light transmitting hard coat film for use in touch panels of this invention has unexpectedly high total light transmittance because the high refractive index layer of this invention contains ATO, zirconium oxide and/or titanium oxide in the high refractive index layer in the specific range claimed in the this invention.

From a review of the comparative data, I conclude that the light transmitting hard coat film for use in touch panels provides unexpectedly superior adhesion between the high refractive index layer and low refractive index layer as well as unexpectedly superior total light transmittance as compared with Nishida and Kumazawa.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

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Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: April 4, 2006

Yuko Hongo